

REMARKS

Claims 6-11, 19 and 20 and newly added Claim 21 are active in the case. Reconsideration is respectfully requested.

The present invention relates to stable, high-solids content aqueous dispersions of blocked polyisocyanates.

Claim Amendments

Claim 6 has been amended to clarify that the dispersion is a mixture of two polyisocyanates, one of which is a blocked, hydrophilically modified polyisocyanate (A) and the other polyisocyanate is a blocked, hydrophobic modified polyisocyanate (B). The presence of an auxiliary solvent is positively set forth in the claim.

Claim 8 also has been modified to clarify that the dispersion is a mixture of two polyisocyanates, one of which is a blocked, hydrophilically modified polyisocyanate (A) and the other polyisocyanate is a blocked, hydrophobic modified polyisocyanate (B). The presence of an auxiliary solvent is positively set forth in the claim as less than 2 % by weight.

Finally, newly added Claim 21 has been presented which claims a dispersion of a mixture of polyisocyanates as set forth in Claim 6 and further reciting that the hydrophilically modified polyisocyanate component facilitates the dispersion of the hydrophobic polyisocyanate component in the product dispersion as disclosed at page 11, lines 4-7 of the text. Entry of the amendments into the record is respectfully requested.

Double Patenting Rejection

Claims 6-11, 19 and 20 stand rejected on the basis of obviousness-type double patenting as unpatentable over Claims 1 and 2 of U. S. Patent 6,096,805 and Claims 1-3 of U. S. Patent

6,348,521. The double patenting grounds of rejection are believed to be obviated by the filing of the accompanying Terminal Disclaimer which limits the term of a patent issuing from the present application to the terms of the commonly owned patents. Withdrawal of the rejections is hereby respectfully requested.

Prior Art Rejection

The cited and applied Burkhardt et al patent is clearly of relevance to the present invention since it is discussed in the background section of the present application in the paragraph bridging pages 3 and 4 of the specification. The patent discloses a water-soluble or water-dispersible blocked polyisocyanate which is useful in the preparation of non-tacky films and coatings. However, whereas the present invention as claimed in the active claim embodiments is clearly a polyisocyanate mixture of (a) a required amount of a blocked, hydrophilically modified polyisocyanate and a required amount of a blocked, hydrophobic polyisocyanate, which in the embodiment of Claim 6 is a dispersion of ingredients in an auxiliary solvent and in Claim 8 is such that the dispersion contains less than 2 % by wt of auxiliary solvent, the polyisocyanate dispersion of the patent, contrary to the statement by the Examiner at page 3, lines 1 and 2 of the substantive paragraph under paragraph 4 of the Office Action, **is not a mixture of blocked polyisocyanates, one of which is modified by hydrophilic groups.** Rather, as is clear from the discussion in the patent starting at the bottom of column 4 through column 5 into column 6, the polyisocyanate dispersion of the patent is prepared by reacting a starting polyisocyanate such as the biuretized hexamethylene diisocyanate of many of the examples with a blocking agent in an amount such that the ratio of NCO groups in the polyisocyanate to NCO-reactive groups (of the blocking agent) ranges from 1:0.5 to 1:0.998. The product of this reaction is a **single** polyisocyanate in which at least about 50 % of the NCO

groups of the polymer are blocked. Thereafter, the blocked polymer is reacted with an agent which introduces hydrophilic groups into the polymer. This description is particularly found in column 5 starting at line 25 of the patent where it is mentioned that **in a second reaction stage** the blocked polyisocyanate is reacted with "the hydrophilic components." Accordingly, what the patent discloses is a dispersion of a polyisocyanate in which a substantial portion of the isocyanate groups has been blocked by a blocking agent and the remaining or most of the remaining isocyanate groups are reacted with an agent which results in the introduction of hydrophilic groups in the molecule. The advantage which the present invention provides is a dispersion that is not only very stable, but is one that has a high content of dispersed solids. There is no teaching or suggestion in the reference of preparing a dispersed polyisocyanate material prepared from two different polyisocyanates, one of which is a polyisocyanate in which a portion of the NCO groups is blocked and a second polyisocyanate in which also a portion of the NCO groups is blocked while most, if not all, of the remaining NCO groups are reacted with an agent which introduces hydrophilic groups into the polymer. Accordingly, the obviousness ground of rejection is believed obviated and withdrawal of the rejection is respectfully requested.

It is now believed that the application is in proper condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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IN THE SPECIFICATION

Please replace the paragraph beginning on page 3, line 12 through page 4, line 6 as follows:

--The process that DE 24 56 469 describes for preparing aqueous dispersions starts with partially blocked polyisocyanates, which are reacted with a hydrophilicizing agent, which contains an NCO-reactive group and also a hydrophilic or potentially hydrophilic group, for example, a sulfo acid or carboxyl group. Both types of groups can be converted by neutralization into hydrophilic ionic groups, for example sulfonate or carboxylate groups. The hydrophilicizing agents used in the examples are the sodium salts of N-methylaminoethanesulfonic acid. The reaction product is then dispersed in water. A similar process is described in EP 0 012 348, where the blocked hydrophilicized polyisocyanates are not only self-dispersible, but also promote the dispersion of hydrophobic film-forming resins. In the case of [this process] these processes, however, which [is] are not used industrially, the linking of the compound having a (potentially) hydrophilic group takes place, because of the partial blocking beforehand, at low NCO contents, which firstly requires an uneconomically long reaction time and secondly has the consequence either that not all of the free NCO groups are hydrophilically linked or, in the case of excess hydrophilicizing agent, that unreacted hydrophilicizing agent remains in the polyisocyanate dispersion.--

Please replace the paragraph on page 26, lines 9-20 6 as follows:

--Example I

(1.1 Preparing hydrophilic polyisocyanate

A 741 g amount of IPDI isocyanurate (VESTANAT^(R)T1890 from Huels AG) and 222 g of IPDI (VESTANAT^(R)IPDI from Huels AG) are dissolved with stirring in 500 g of acetone. A 22.0 g amount of a 10% strength solution of dibutyltin dilaurate in acetone, as catalyst, and 134 g of pulverized dimethylolpropionic acid are added with stirring and the mixture is heated to about 60°C so that it boils at reflux. It is stirred until all the dimethylolpropionic acid has dissolved and the NCO content of the solution (determined in accordance with DIN 53185) has fallen to 7.8-8.0%, which takes [from] 6-8 hours.--

IN THE CLAIMS

Please amend Claims 6 and 8 as follows:

-- 6. (Amended) A stable and high-solids aqueous dispersion containing auxiliary solvent, which comprises:

a disperse phase of a polyisocyanate mixture [of] comprising (a) from 20-70% by weight of a blocked, hydrophilically modified polyisocyanate (A) and (b) from 30-80% by weight of a blocked, hydrophobic polyisocyanate (B) in an auxiliary solvent (G), the product aqueous dispersion having a solids content [of] ranging from 35-80 % by weight.

8. (Amended) A stable and high-solids aqueous dispersion which is virtually free from auxiliary solvent, which comprises:

a disperse phase of a polyisocyanate mixture [of] comprising (a) from 20-70% by weight of a blocked, hydrophilically modified polyisocyanate (A) and (b) from 30-80% by weight of a blocked, hydrophobic polyisocyanate (B), having a solids content [of] ranging from 40-60 % by weight and a content of auxiliary solvent (G) of <2 % by weight. --

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Please add new Claim 21 as follows:

--21. (Newly Added) A stable and high-solids aqueous dispersions containing auxiliary solvent, which comprises:

a disperse phase of a polyisocyanate mixture comprising (a) from 20-70% by weight of a blocked, hydrophilically modified polyisocyanate (A) and (b) from 30-80% by weight of a blocked, hydrophobic polyisocyanate (B) in an auxiliary solvent (G), the product aqueous dispersion having a solids content ranging from 35-80 % by weight in which the blocked, hydrophilically modified polyisocyanate (A) facilitates the dispersion of blocked, hydrophobic polyisocyanate (B) in the product aqueous dispersion. --